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TM
1943
WAR DEPARTMENT TECHNICAL MANUAL

TM 5-4020

U.S. Army

DRILL, PNEUMATIC, ROCK,
55 POUND CLASS,
WITH DRILL BITS,
and DRILL STEEL,
INDEPENDENT PNEUMATIC,
MODEL, THOR, No. 75



MAINTENANCE INSTRUCTIONS AND PARTS CATALOG

WAR DEPARTMENT • OCTOBER 1943

TM 5-4020

WAR DEPARTMENT

TM 5-4020, Drill, Pneumatic, Rock, 55 Pound Class, With Drill Bits, and Drill Steel, Independent Pneumatic, Model Thor, No. 75, is published for the information and guidance of all concerned.

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By order of the Secretary of War:

G. C. MARSHALL
Chief of Staff

Official

J. A. ULIO,
*Major General,
The Adjutant General*

DRILL, PNEUMATIC, ROCK,
55 POUND CLASS,
WITH DRILL BITS,
and DRILL STEEL,
INDEPENDENT PNEUMATIC,
MODEL, THOR, No. 75



MAINTENANCE INSTRUCTIONS AND PARTS CATALOG

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INTRODUCTION

III

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GENERAL DESCRIPTION

The Thor No. 75 Pneumatic Rock Drill is an exceptionally powerful hand-held machine for heavy duty on deep hole drilling for shaft sinking, road building and general mining and construction rock drilling operations.

A simple throttle valve handle incorporated in the upper part of the back head controls the throttle valve to provide convenient operation. The front head is provided with a swivel type steel retainer conveniently located and operated for rapid change of steel. Easy handling and minimum vibration are assured by the positive short travel, tubular type valve.

The No. 75 Rock Drill is quickly and securely attached to the hose end by means of universal coupling.

SPECIFICATIONS

THOR NO. 75 ROCK DRILL

Length overall.	23-3/4
Weight.	56 lbs.
Bore of Cylinder.	2-5/8"
Size of Steel	1" Hex. x 4-1/4" Shank
Type of Steel	Collared Shank, hollow
Size of Air Hose Recommended.	3/4" Inside Diameter
Normal Operating Air Line Pressure.	90 lbs. Per sq. inch.



This is the No. 75 Thor Sinker Rock Drill. It weighs 56 pounds and does hard deep hole drilling, shaft sinking and quarrying types of jobs.

MAJOR UNIT IDENTIFICATION

Thor No. 75 Rock Drill

BACK HEAD UNIT. This unit includes back head, "T" handle, throttle valve lever, and throttle valve parts.

RUBBER COVERED HANDLES

THROTTLE LEVER. Actuates valve to release air into drill.

AIR INLET SWIVEL CONNECTION
Air strainer screen unit screws on here.

CYLINDER UNIT. This unit includes the cylinder, rifle bar and rotation assembly, automatic valve and parts, exhaust valve and oil reservoir.

EXHAUST AIR OUTLET Keep free of obstructions.

EXHAUST VALVE. Controls air flow through machine for hole blowing.

CYLINDER. Contains rotation assembly and automatic valve.

OIL PLUG to oil reservoir.

FRONT HEAD UNIT. This unit includes front cylinder head with the chuck, chuck driver and steel retainer parts.

FRONT HEAD with chuck driver, and chuck inside.

STEEL RETAINER. Holds drill steel in chuck.

Shank (1" Hex. x 4 1/4")

COLLARED DRILL STEEL

DETACHABLE BIT

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WHAT TO DO

BEFORE STARTING ROCK DRILL

This Rock Drill was given a rigid operating test and final inspection before it was shipped from the factory. We recommend that you read and follow the procedure outlined below before starting or placing the No. 75 Rock Drill in service.

Lubrication (See Pages 6 to 8 for details)

1. Fill the oil reservoir in the cylinder with the correct grade of lubricant, see "Type of Lubricant to be Used". (Page 8)
2. Be sure the oil reservoir plug (No. C-734) is screwed into oil reservoir tightly.
3. When operating, check the oil supply in the reservoir occasionally since consumption of oil varies with the operation, temperature conditions, and type or viscosity of oil used. Never allow the reservoir to run dry.

Operating Air Line Pressure

1. Check air pressure. Normal operating air line pressure is 90 pounds per square inch.
 - (a) Lower pressure will decrease operating efficiency.
 - (b) Higher pressures require only that operator be certain to have complete control of the drill so that he can stop it instantly should a steel break or snap.
2. See that 3/4" inside diameter hose is used. This is essential to maintain sufficient supply of air.

Steel Inspection

1. Inspect the shank end of the drilling steel to be used.
 - (a) Shank end must be flat and square. A solid, direct blow must be transmitted each time the piston strikes.
2. Examine entire steel for flaws.
3. Check through bolts and nuts. Be sure all nuts are tight.

Placing Steels in Retainer

1. The steel retainer of the No. 75 Rock Drill is designed to accommodate 1" Hex. x 4-1/4" Shank Collared Steel.
2. Front head is provided with a steel retainer (No. C-1504) designed and conveniently located so that it may be swiveled out and in easily by foot or hand to insert different lengths of drilling steels.

3. To unlock or open steel retainer, swing the (No. C-1504) steel retainer to "out" position. (See Illustration No. 1, Figure 1 below.)
4. Place the steel to be used in a vertical position and slide the drill down over the steel's shank. (Note)
5. Swing back the retainer to "horizontal" position to lock steel in front head chuck. (See Illustration No. 1, Figure 2 below.)

NOTE: The drill can also be laid on its side when inserting steel.

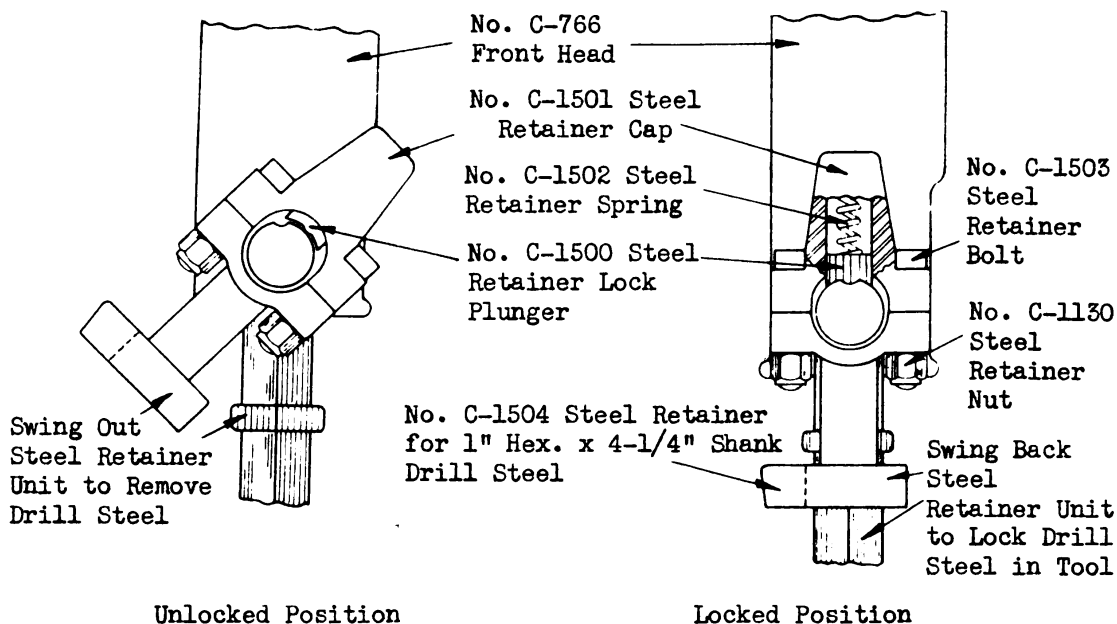


Figure 1

Figure 2

Illustration No. 1

Connecting Air Hose To Tool

1. Always blow out the air hose before connecting it.
2. Blow off hose nipple to free any small particles of dirt, scale or other foreign matter lodged inside or near end.
3. Check air strainer to be sure it is clean.

A large percentage of repairs to pneumatic tools is due to water, dirt and scale entering the tool from the hose and pipe lines. Keep them clean. It is recommended that the machine be flushed before placing it in service to guard against possible injurious effects from small particles which might have escaped past the air strainer. (See "Flushing Internal Parts", Page 5.)

OPERATION OF ROCK DRILL

1. To start the machine, place point of steel at desired operation point and turn throttle lever (No. C-713). (Throttle lever may be operated with right or left hand.)
2. Bear down on the tool just enough to prevent the steel from bounding around.
3. Throttle Valve Control Lever Operation. The 4-position No. C-712 throttle valve, actuated by the conveniently located No. C-713 throttle valve lever, enables the operator to have complete control of drilling speeds for various drilling operations. Refer to Illustration No. 2, illustrating the stop position and the three operating positions of the No. C-713 throttle valve handle.

3

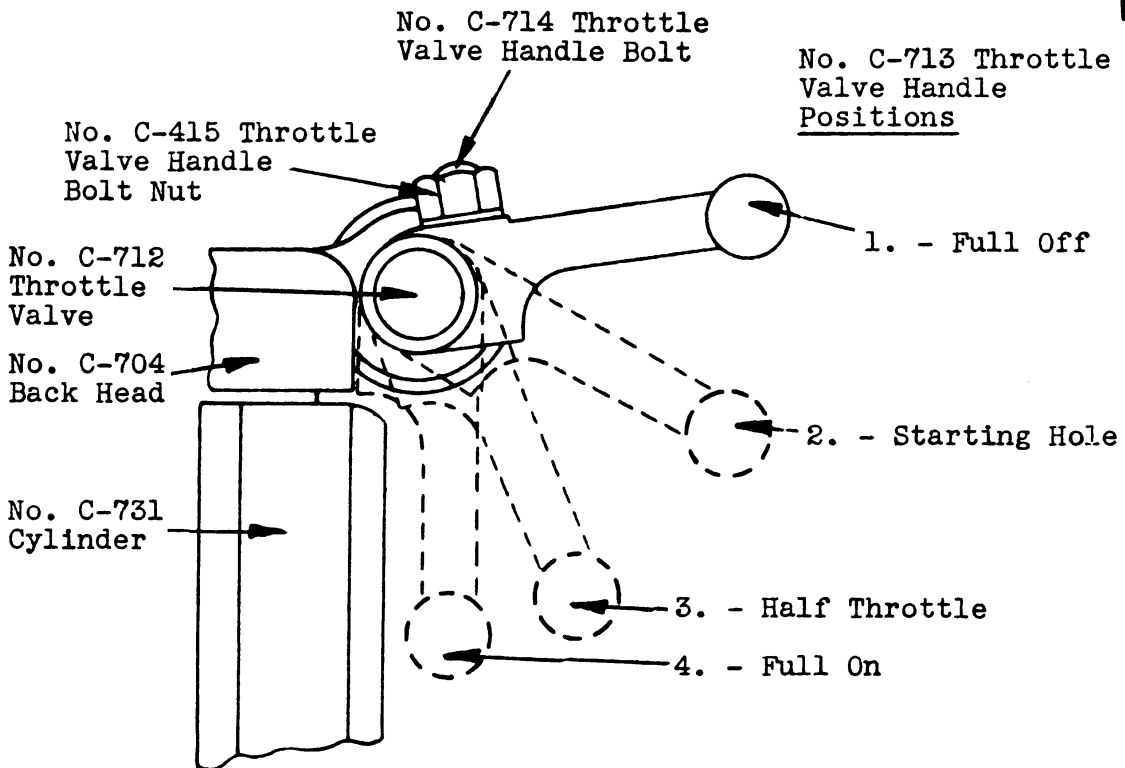


Illustration No. 2

4. Exhaust Valve Operation. There is a constant limited amount of air blowing through the C-719 Air Tube while the machine is in operation which is not enough to keep hole clean. The function of the No. C-735 exhaust valve is to increase the flow of air through the center of the machine and drill steel to blow the cutting wastes from the hole being drilled. (Refer to Illustration No. 3, Page 4.)

When the No. C-735 valve is turned upward to position "A", the drilling operation of the machine ceases and the increased blowing operation begins. Turning the No. C-735 valve downward to position "B", the increased blowing action ceases and the drilling operation is resumed.

A clean hole speeds up the cutting capacity; therefore, it is important that the C-735 exhaust valve be operated every 20 to 30 seconds to blow out accumulated chips. The No. C-712 throttle valve must be open in order to blow out hole.

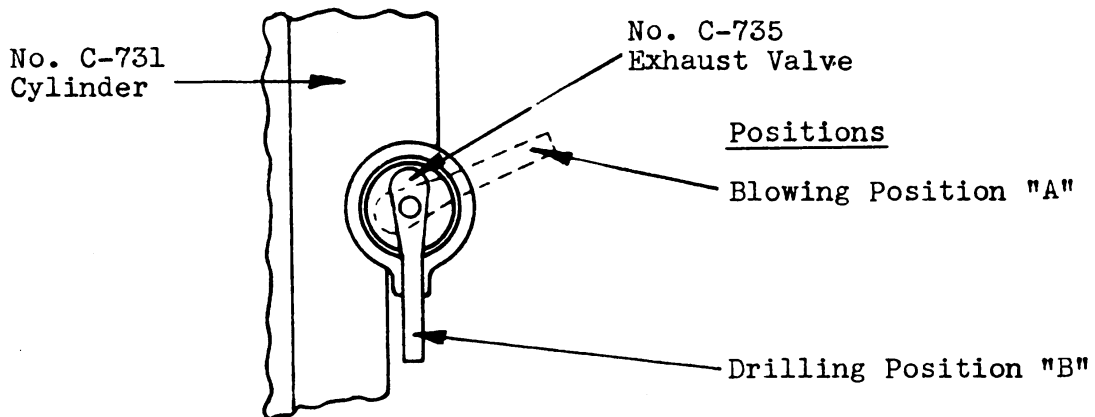


Illustration No. 3

FIELD SERVICE OPERATIONS

The following minor servicing jobs should be done occasionally in the field by the machine operator to assure the most efficient performance of the Drill and prevent unnecessary wear or breakage caused by every-day neglect of the machine.

Flushing Internal Parts

Should small particles of dirt or grit in the air hose escape past the air strainer and enter the tool, flush the machine with small quantities of gasoline. This should be done before placing the Drill in service; when retiring the machine for a short time; and after every 64 hour period of operation.

To Flush

1. Pour a small amount of gasoline into the air inlet, connect the air hose and operate the machine a short period.
2. Pour a liberal amount of light machine oil (OE-10) into the air inlet and operate machine in the same manner as above.

Note: It is imperative that Drill be flushed with oil immediately after cleaning with gasoline since gasoline flushing leaves parts dry of lubrication.

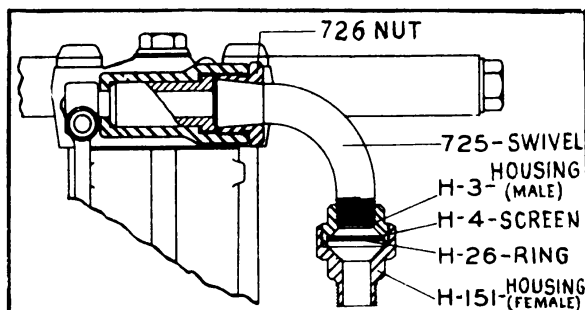
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Air Strainer Screen

An air strainer screen (No. C-H-4) is provided in the C-725 air inlet swivel to filter dirt and grit particles from the compressed air entering the machine. This strainer should be cleaned every 64 hours to provide free air passage.

To clean strainer:

- (a) Disconnect air hose.
- (b) Unscrew No. C-H-151 air strainer housing (female) from the No. C-725 Air Inlet Swivel.
- (c) Remove air screen lock ring (No. C-H-26).
- (d) Remove air strainer screen (No. C-H-4) from male housing (C-H-3).
- (e) Clean strainer thoroughly in gasoline.
- (f) Dry strainer with blasts of air.
- (g) Replace strainer and unit to original positions.



LUBRICATION

Proper and sufficient lubrication is the most important single factor in keeping performance of the No. 75 Rock Drill at a maximum and repairs at a minimum. The following lubrication jobs should be done regularly by the operator.

Oil Reservoir

The cylinder is provided with an oil reservoir in lower front end from which lubrication is automatically supplied through two oil control felts (No. C-396) (See Illustration No. 4, Page 7).

- (a) Fill oil reservoir before putting Drill in service.
- (b) Re-fill reservoir at two hour intervals during continuous operation.
- (c) More frequent replenishing of oil may be necessary depending upon viscosity of oil used and local operating conditions. Check oil reservoir and do not let it run dry.

To fill the reservoir

1. Unscrew oil plug (No. C-734) (Illustration No. 4, Page 7).
2. Pour lubricant into reservoir.

Oil Control Felts

The two oil control felts (No. C-396) (Illustration No. 4, Figure 1, Page 7) are located in the upper end of the cylinder in oil channels directly connected to the reservoir in the air stream passage. They measure out, in proper amount, the lubricant passing to the internal bearing points of the Drill.

- (a) Keep the oil control felts free of dirt.
- (b) Remove oil control felts every 64 hours and clean thoroughly in gasoline. Dry felts with blasts of air and replace.

To remove oil control felts

1. Remove C-704 Back Head by removing the two No. C-774 Side Rods and Nuts.
2. Unscrew No. C-2503 Oil Control Plugs (Illustration No. 4, Page 7) from inside of cylinder with No. C-2524 3/16" Hex. Wrench.
3. Pull out the two No. C-396 oil control felts with a small nose pliers; or a hooked wire; or a wood screw.
4. Clean felts in gasoline, dry, and replace.
5. Reassemble No. C-704 Back Head to No. C-731 Cylinder, draw up tight.

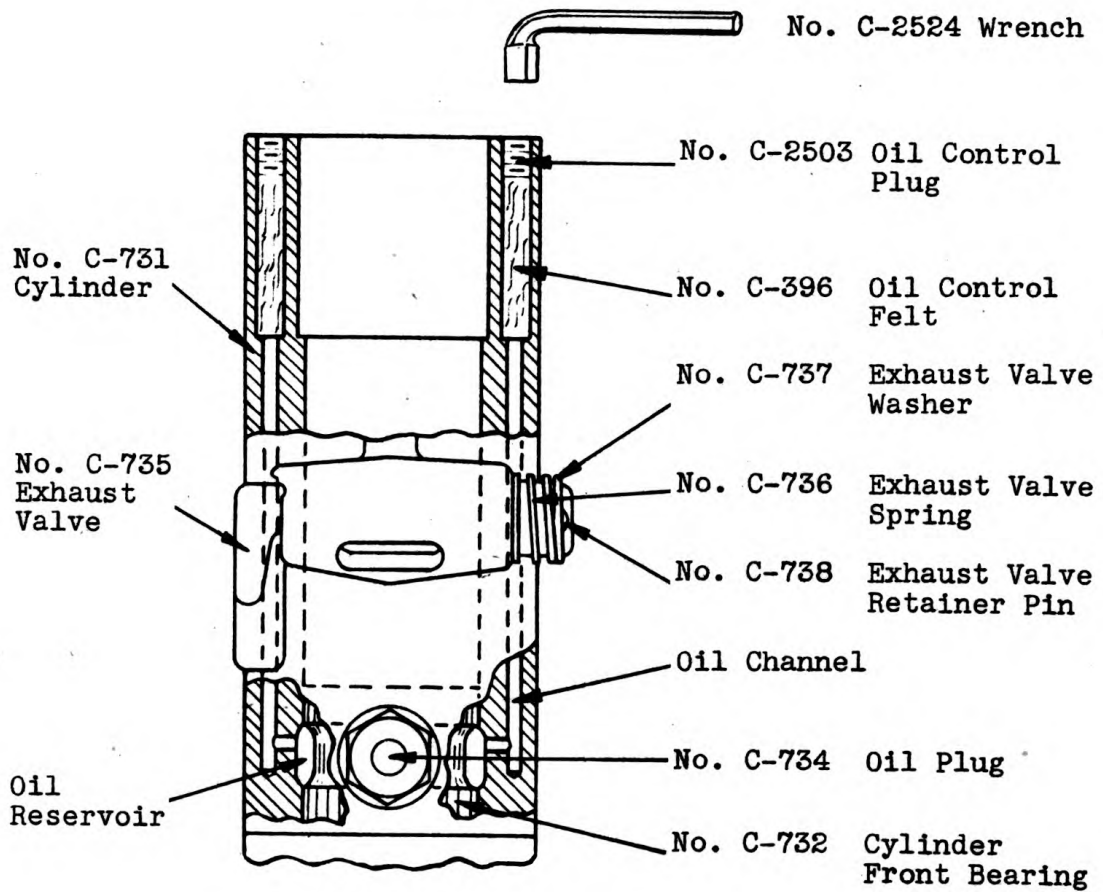


Figure 1

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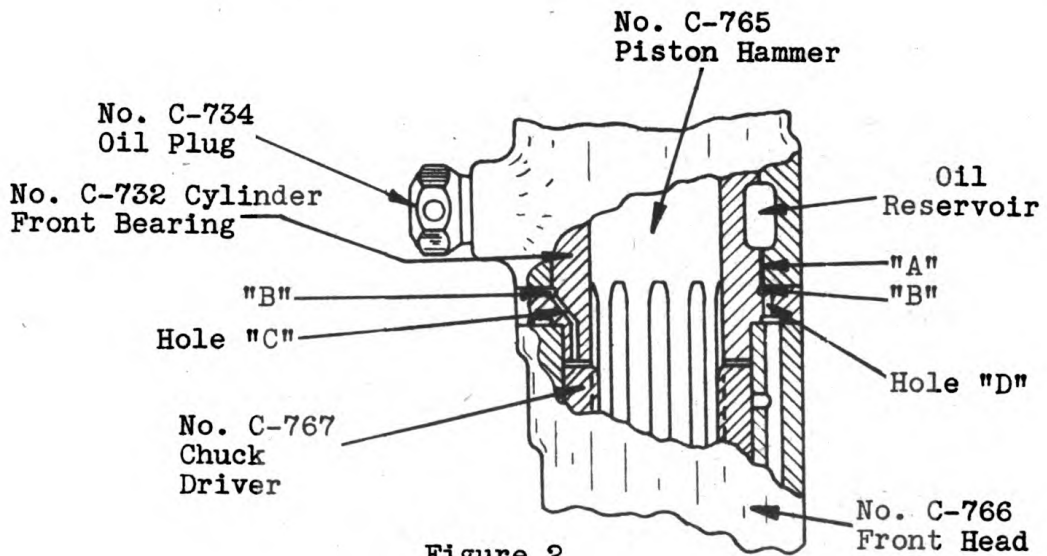


Figure 2

Illustration No. 4

Automatic Oil Control Regulator Operation

With the oil reservoir properly filled and the oil control felts clean and porous it is not necessary to consider manual lubrication of the Rock Drill during operation, as the oil control regulator is completely automatic. When air pressure is applied inside the oil reservoir (See Illustration No. 4, Page 7), sudden changes in air pressure in the main air passage cause built up pressure inside the reservoir to fluctuate, thus causing oil to be forced through the oil control felts and into the path of the main air stream, to be distributed to internal bearing surfaces.

At the same time, oil is forced through a slightly flattened opening at point "A" (Figure 2, Illustration No. 4, Page 7) into the small circular trough at point "B". This small trough then carries the oil to two small holes "C" and "D". Hole "C" supplies lubrication to the fluted sections of the No. C-767 chuck driver and No. C-765 piston hammer. Hole "D" supplies lubrication to the bearing surface between the No. C-767 chuck driver and No. C-766 front head.

Type of Lubricant to be Used

The nature of the oil to be used depends primarily on temperature.

Temperature	Oil Specifications
	U. S. Army Symbol
32° F. to 0° F.	OE-10 (Oil, Engine, SAE 10)
Above 32° F.	OE-30 (Oil, Engine, SAE 30)

Under no circumstances should used crankcase oil be employed.

Oil which has been standing in an open container collecting dust and dirt should not be used.

EXTREME WEATHER CONDITIONS

Hot Weather Operation

The No. 75 Rock Drill will operate successfully in extreme high temperatures without adjustments.

- (a) Lubrication. Particular care should be given that proper grade lubricant is used.
- (b) Check lubrication frequently.
- (c) Keep parts clean. Flush internal parts before putting Drill into service after standing idle for long periods of time.
- (d) Air strainer. Check frequently to insure against accumulation of dust and dirt.

Cold Weather Operation

Follow all ordinary service operations with particular care to see that proper winter lubricant is used.

Preparing Rock Drill For Storage

When the machine is not to be used for a period of time, it should be stored in a dry and protected place. Following procedure should be followed when the unit is placed in storage.

1. Flush liberal amounts of gasoline through the tool (See "Flushing Internal Parts", Page 5).
2. Flush liberal amounts of light machine oil OE-10 (S.A.E. 10) to coat all parts.
3. Pour liberal amounts of the same light oil into the exhaust outlet and air inlet openings. Then plug each opening tightly with a cloth to prevent entry of dust or dirt.

MEMORANDA

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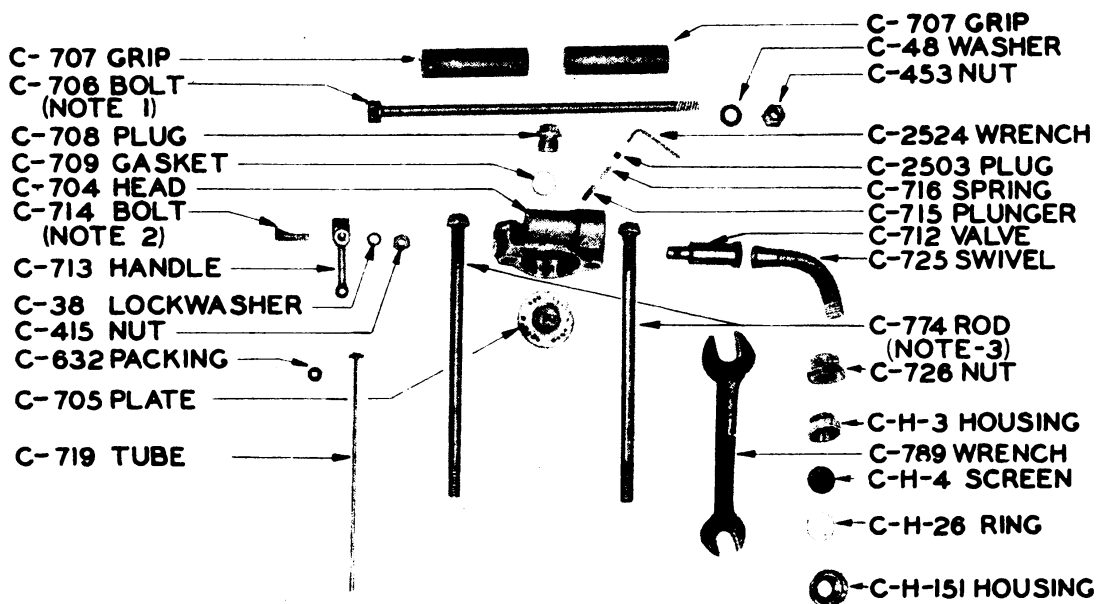
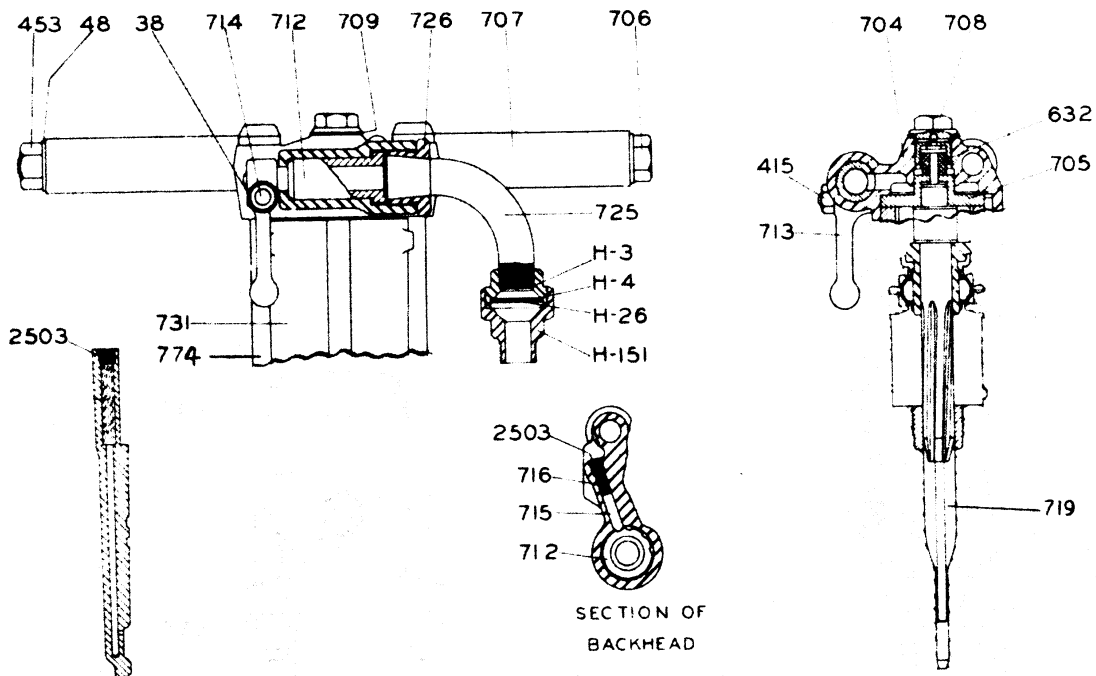
SUMMARY OF SERVICING OPERATIONS

Proper and complete maintenance and servicing of the Rock Drill requires thorough inspection, cleansing and lubrication of each and every part at least once every 2048 hours. If the breaker is used continuously, the servicing job should be done more frequently.

1. To accomplish the above procedure, each unit assembly should be disassembled into its component parts. (A unit assembly is a group of parts assembled together to perform a definite function in the operation of the machine.)
 - (a) Thoroughly inspect each part for worn bearing surfaces as well as for corroded sections.
 - (b) If the part is badly worn and beyond repair, it should be replaced.
 - (c) Assembly of new parts in conjunction with badly worn parts may cause rapid failure to both parts.
2.
 - (a) Thoroughly clean each part in a dirt and grease cutting solvent such as gasoline.
 - (b) Lubricate the separate parts with light machine oil.
 - (c) Reassemble parts to complete the unit assembly.
3. All unit assemblies, each having been properly serviced, may then be assembled together to complete the final assembly of the Rock Drill.

GENERAL INFORMATION

When reading the following instructions, refer to the exploded views as well as to the cross sectional drawings of the assembled tool for further information regarding the appearance or design of each part and its relationship with the parts adjacent to it.



NOTE-1. C-706 BOLT INCLUDING
C-48 WASHER
C-453 NUT

NOTE-2. C-714 BOLT INCLUDING
C-38 LOCKWASHER
C-415 NUT

NOTE-3. C-774 ROD INCLUDING
C-772 NUT

Exploded View

Illustration No. 5

Original from
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2. Remove the No. C-716 detent plunger spring. (Replace, if broken.)
3. Remove the No. C-715 detent plunger. (Replace, if the pointed end is worn smooth and flat.)

No. C-712 Throttle Valve (See Illustration No. 5, Page 14.)

1. Unscrew the No. C-726 air inlet swivel nut.
2. Remove the No. C-725 air inlet swivel.
3. Unscrew the No. C-415 throttle valve handle bolt nut.
4. Tap the No. C-714 Handle Bolt out of the No. C-713 throttle valve handle.
5. Remove the No. C-713 Handle from the No. C-712 throttle valve.
6. The No. C-712 throttle valve may now be removed from the No. C-704 back head.
7. Clean the No. C-712 throttle valve as well as the No. C-704 back head in gasoline to remove all dirt and grit.
8. Apply liberal amounts of OE-#10 oil to the No. C-712 Valve before reinserting it into the No. C-704 back head.
9. Line up the slot in the No. C-712 valve with the bolt hole in the No. C-713 valve handle and insert the No. C-714 bolt.
10. Place the No. C-38 lock washer and No. C-415 nut and tighten securely.

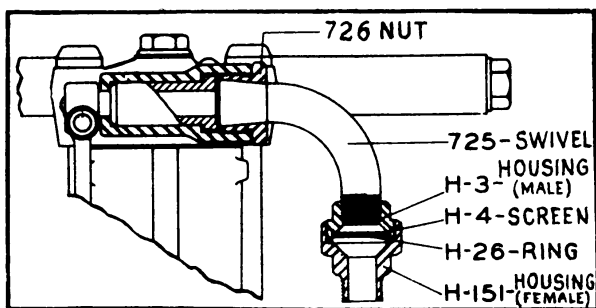
No. C-725 Air Inlet Swivel

1. Note the tapered surfaces on the No. C-725 air inlet swivel and in the No. C-726 air swivel nut. This type of construction permits an air-tight, self-sealing seat at the swivel connection. However, if the tapered seats become worn and out of shape, which may occur after long and continued use, the No. C-725 swivel and No. C-726 nut should be replaced.
2. When reassembling the No. C-725 air inlet swivel to the No. C-704 back head, draw the No. C-726 nut up tight against the No. C-704 back head to prevent any possible air leakage through the screw threads.
3. At this point the No. C-725 air inlet swivel should rotate fairly easy and also maintain an air tight seal.

No. C-H-4 AIR SCREEN PARTS

1. To clean the No. C-H-4 air screen:

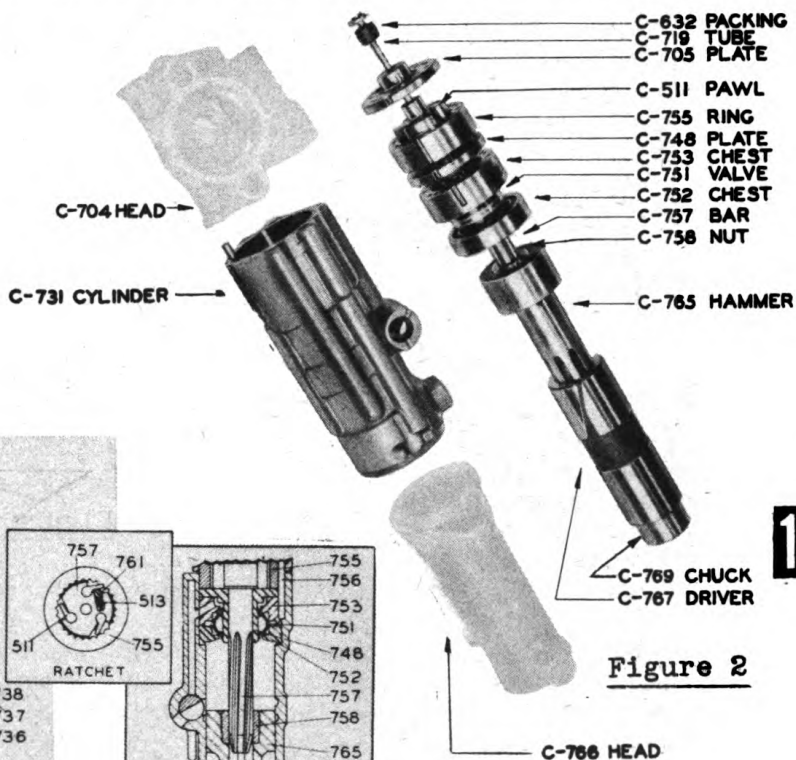
- (a) Remove the air screen unit by unscrewing No. C-H-3 air screen housing from the No. C-725 air inlet swivel.
- (b) Unscrew the No. C-H-3 air screen housing (Male) from the No. C-H-151 air screen housing (Female).
- (c) Remove the No. C-H-26 air screen lock ring.
- (d) Remove No. C-H-4 air screen.
- (e) Wash air screen in gasoline.
- (f) Blow screen dry with blasts of air.
- (g) Should the No. C-H-4 air screen be partially corroded it should be replaced.
- (h) Reassemble unit in reverse order.



CYLINDER UNIT

Unit Disassembly (See Illustration No. 6, Below)

Since the two No. C-774 side rods and nuts have already been removed to separate the No. C-704 back head from the No. C-731 cylinder, the No. C-766 front head may now be pulled from the No. C-731 cylinder. (See also Illustration No. 5 and 11, Pages 14 and 24).



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Figure 2

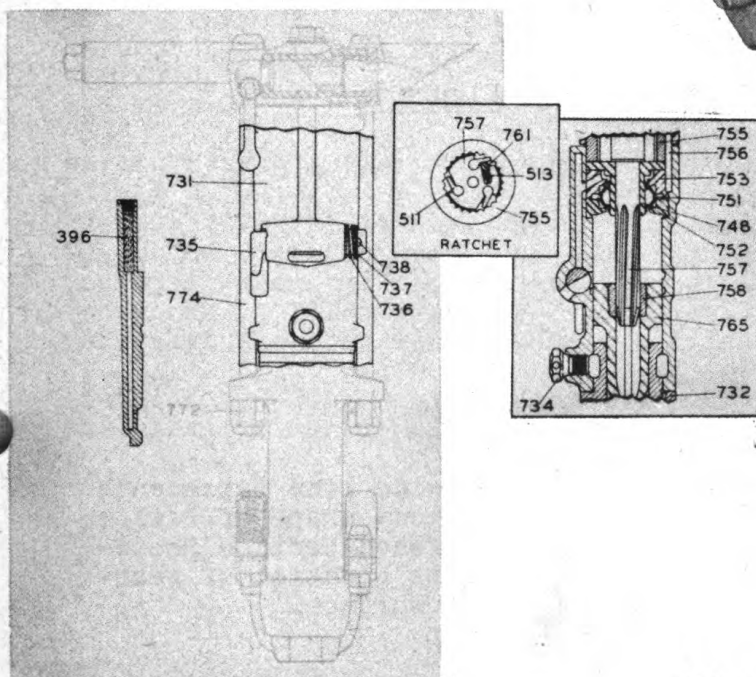


Figure 1

Illustration No. 6

Rifle Bar Assembly

The rifle bar unit, at the extreme top of the No. C-731 cylinder, protrudes into the No. C-704 back head. It imparts the left hand rotational movement to the Rock Drill.

1. Lift the entire unit out of the No. C-731 cylinder.

2. Disassemble it into its component parts.

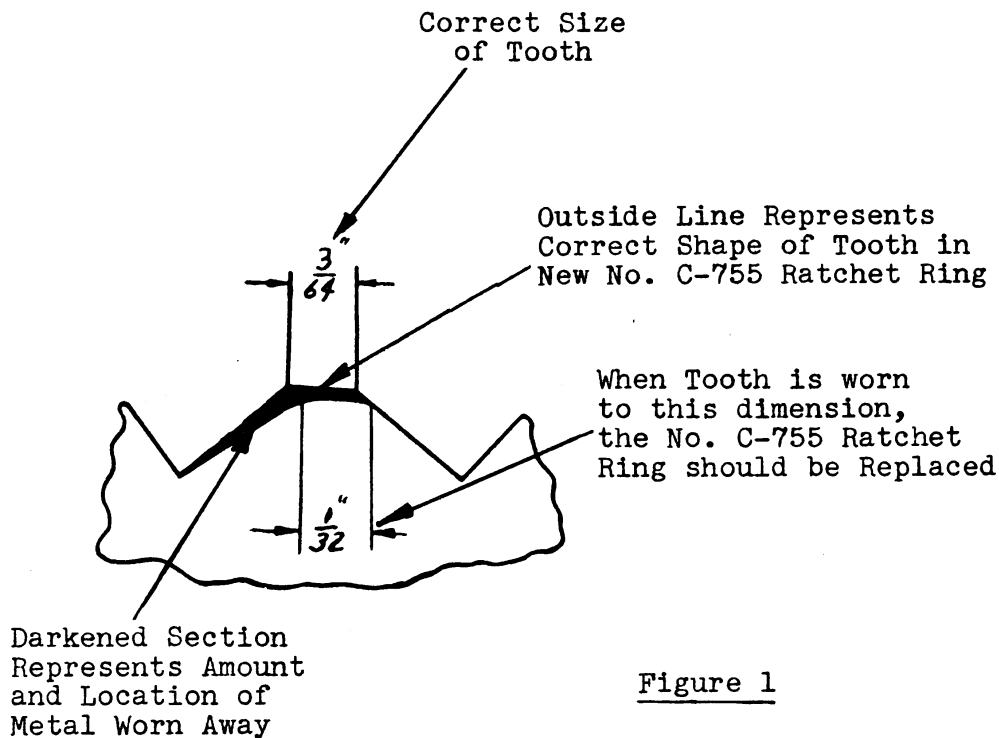


Figure 1

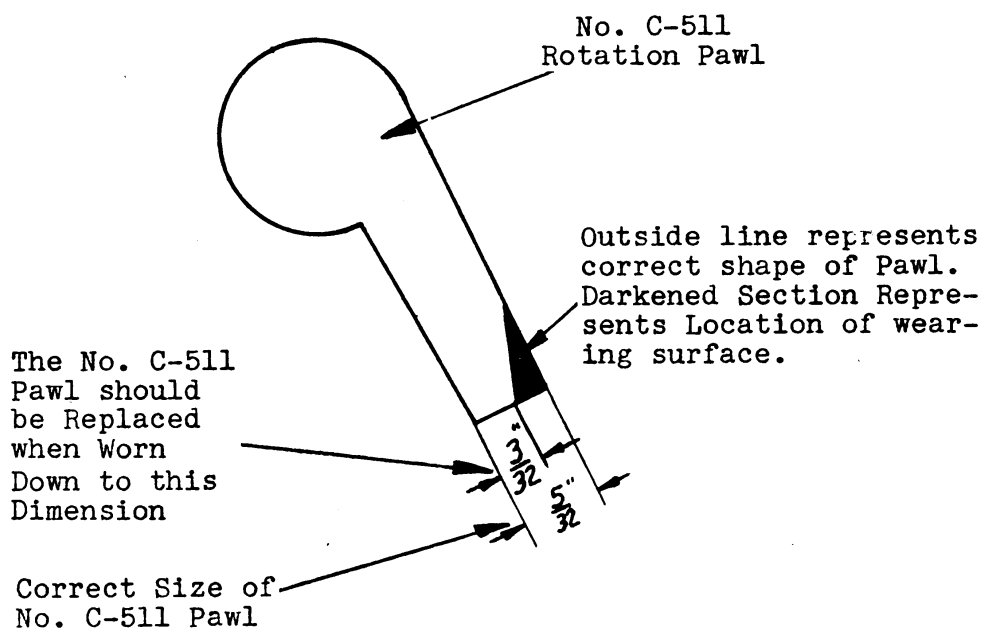


Figure 2

No. C-755 Ratchet Ring

1. Inspect the ratchet teeth inside the No. C-755 Ratchet Ring.
2. The No. C-755 Ring should be replaced if the teeth are worn down to $\frac{1}{32}$ ", as illustrated in Illustration No. 7, Figure 1, Page 18).

(Note: The height of each tooth is decreased corresponding to the wear off the side of the tooth. This being the case, if the No. C-757 Rifle bar were placed into its correct position in the No. C-755 Ring, it would have considerably more play than if the No. C-757 Rifle bar were placed into a new No. C-755 Ring. Worn parts slow down rotation and cutting efficiency.)

No. C-511 Rotation Pawl

The three No. C-511 Pawls, which slide over the ratchet inside the No. C-755 ratchet ring each time the hammer strikes, should be replaced when worn down to $\frac{3}{32}$ " - as shown in illustration No. 7, Figure 2. (The darkened sections in Figures 1 and 2, Illustration No. 7, Page 18, represent the location of wearing surfaces.)

No. C-757 Rifle Bar

The No. C-757 Rifle Bar, which forms the connection between the No. C-765 piston hammer and the ratchet ring unit, should be replaced when the flutes are worn off $\frac{1}{32}$ " on the one side. (As shown in Illustration No. 8, below.) (The darkened sections represent the location of wearing surface.)

If the No. C-761 Pawl plunger is badly worn or the No. C-513 pawl plunger spring is broken, they should be replaced.

Correct Size
of Flutes

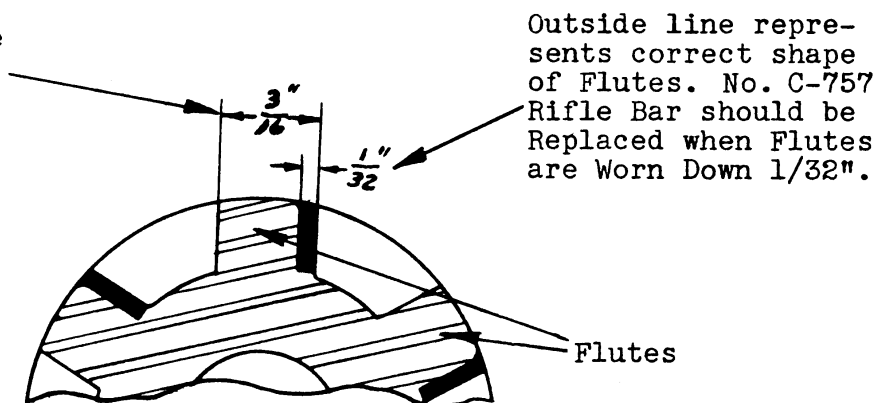


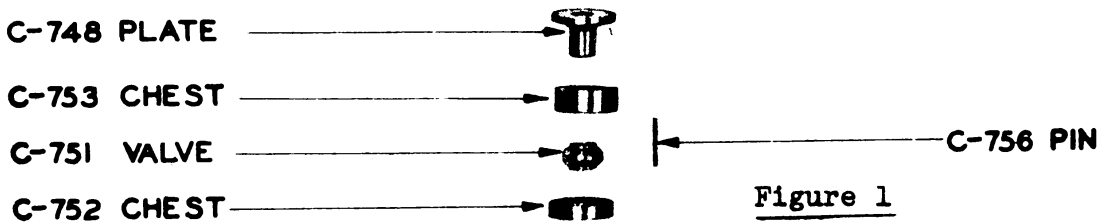
Illustration No. 8
Sectional End View of No. C-757 Rifle Bar

Automatic Valve and Adjacent Parts

The No. C-751 Automatic Valve and its adjacent parts which control the direction of air flow in the Drill, are located in the upper end of the cylinder. (See Illustration No. 6, Page 17).

To Remove the Valve Parts

1. The valve unit assembly is driven out of the upper end of the cylinder from within.
2. Slide the No. C-765 Piston Hammer in the No. C-731 cylinder up against the valve unit.
3. Bump the C-765 Piston Hammer against valve unit to lift it out of top of cylinder.
4. The valve unit may now be disassembled into its four component parts: the No. C-752 Valve Chest (Front), No. C-753 Valve Chest (Rear), No. C-751 Automatic Valve and No. C-748 Valve Guide Plate. (See Illustration No. 9, Figure 1, below.)
5. Thoroughly clean all parts in gasoline.



Outside View of No. C-751 Automatic Valve

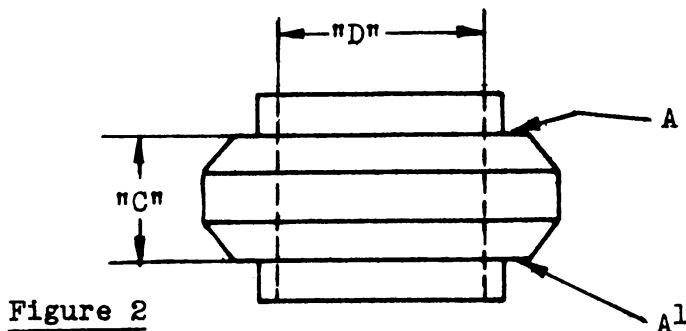


Illustration No. 9

6. Inspect the No. C-751 Automatic Valve at points as shown in Illustration No. 9, Figure 2, above.

- (a) If the shoulders at A and A¹ are deeply grooved or recessed due to continuous tapping of the valve at these shoulders against the No. C-752 front and No. C-753 rear valve chests, the No. C-751 valve should be replaced. (These shoulders cannot be ground

back to a smooth surface since the dimension "C" must have a definite value for efficient valve operation,)

- (b) Inspect the inside diameter "D" of the No. C-751 valve. If the No. C-751 valve fits loosely on the No. C-748 Valve Guide Plate, these parts should also be replaced.

Reassembly of Valve Parts (Refer first to "Cylinder Front Bearing," Page 23.)

1. Before reassembling, lubricate each part with a light machine oil.
2. Reassemble each part separately into the cylinder:
 - (a) Insert the No. C-752 Front Valve Chest into its properly seated location in the No. C-731 Cylinder. (See Illustration No. 6, Page 17.)
 - (b) Place the No. C-751 automatic valve into No. C-752 Front Valve Chest.
 - (c) Insert the No. C-753 Rear Valve Chest into the No. C-731 Cylinder.
 - (d) Line up No. C-756 Valve Chest Dowel Pin slots in No. C-731 Cylinder and No. C-753 Rear Valve Chest.
 - (e) Insert the No. C-756 Valve Chest Dowel Pin into its hole.
 - (f) Insert the No. C-748 Valve Guide Plate into the No. C-731 Cylinder.
 - (g) Be sure all parts are properly seated in the Cylinder before placing rifle bar assembly in Cylinder.

Cleaning the Lubricating System (See Illustrations No. 6 and 10, pages 17 and 22)

1. Remove the two No. C-396 oil control felts, located at the upper end of the No. C-731 cylinder.
2. Clean felts thoroughly in gasoline.
3. Dry with blasts of compressed air.
4. Apply blasts of compressed air through the oil channels.
5. Reassemble the No. C-396 oil control felts.

No. C-765 Piston Hammer (See Illustration No. 10, Figures 1 and 2 Page 22)

The No. C-765 piston hammer drives the drill steel and also rotates the No. C-767 chuck driver. It should be replaced when the flutes are worn down $1/32$ " under the normal size as shown in illustration No. 10 Page 22. (The blackened section represents the location of wearing surface.)

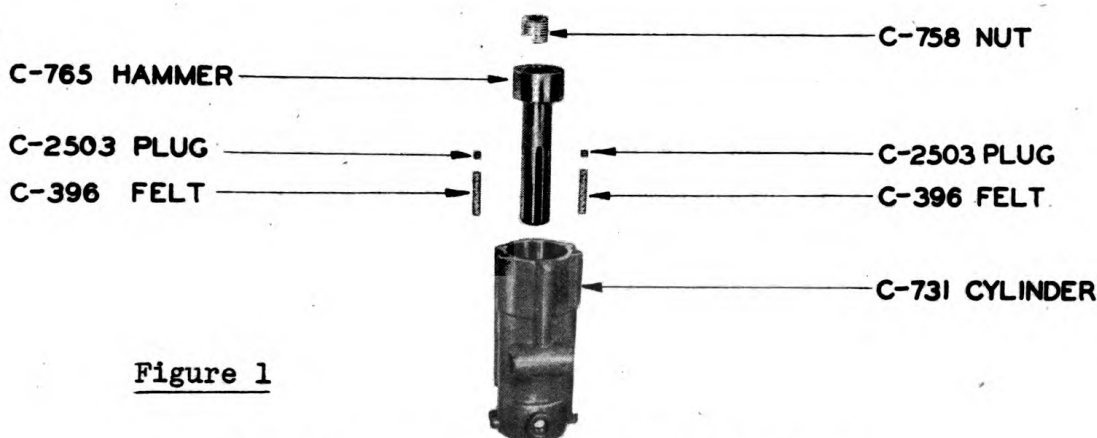
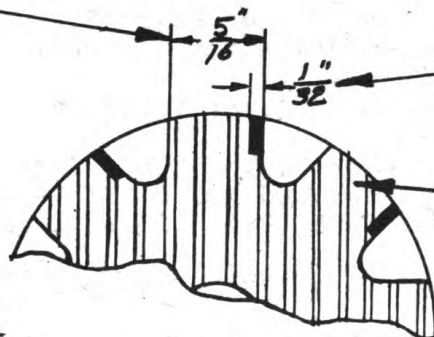


Figure 1

Sectional End View of No. C-765 Piston Hammer

Correct Size
of Flutes



Outside line represents correct shape of Flute. No. C-765 Piston Hammer should be Replaced when Flutes are Worn Down this Amount.

Flute

Figure 2

Illustration No. 10

Removing the No. C-758 Rifle Nut (See Illustrations No. 6 and 10, Page 17 and above.)

The No. C-758 Rifle Nut, located in top of C-765 Piston Hammer, serves as the connection between the No. C-765 Piston Hammer and No. C-757 Rifle Bar. It should be replaced when the flutes are worn down similar to those on the No. C-757 rifle bar. (See Illustration No. 8, Page 19.)

1. Place the fluted end of the No. C-765 Piston Hammer into a vise with copper covered jaws.
2. Insert the No. C-757 rifle bar into the No. C-758 nut.
3. Unscrew the No. C-758 nut from the No. C-765 hammer in a CLOCKWISE DIRECTION, (LEFT HAND THREAD) by using an adjustable wrench on head of No. C-757 Rifle Bar. (Note: An old, discarded No. C-757 rifle bar, the head of which has been ground down to two flats should be used for a wrench if available.)
4. The new No. C-758 Rifle Nut is screwed into the No. C-765 Piston Hammer in a reverse operation.

No. C-735 Exhaust Valve (See Illustration No. 11, Page 24)

To remove the No. C-735 exhaust valve:

1. Compress the No. C-736 exhaust valve spring.
2. Extract the No. C-738 exhaust valve retainer pin.
3. Remove the No. C-735 exhaust valve from the No. C-731 cylinder.
4. Clean thoroughly in gasoline.
5. Replace if badly worn.

No. C-732 Cylinder Front Bearing (See Illustration No. 11, Page 24)

A. The No. C-732 cylinder front bearing, located at the extreme lower end of the No. C-731 cylinder and which forms the oil reservoir, is a press fit in the No. C-731 cylinder.

1. Inspect the inside diameter of the No. C-732 bearing. (If worn to a slight oval shape, the No. C-732 bearing should be:
 - (a) Removed.
 - (b) Turned one (1) quarter-turn from its former assembled position.
 - (c) Pressed back into the No. C-731 cylinder.
2. If the No. C-732 bearing is badly worn, it should be replaced.

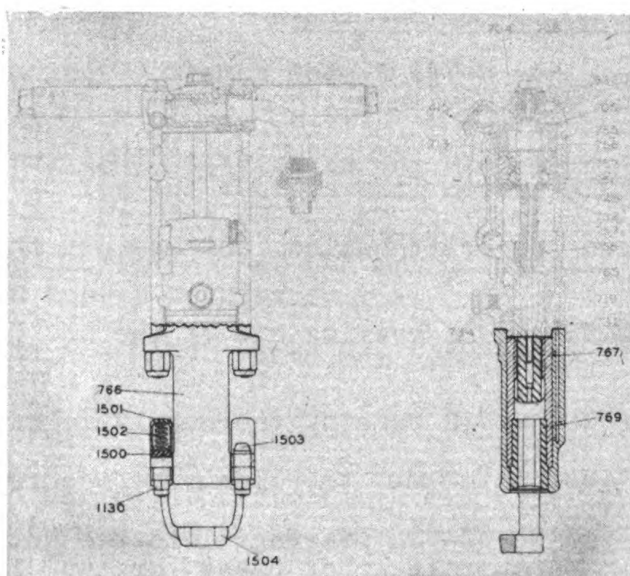
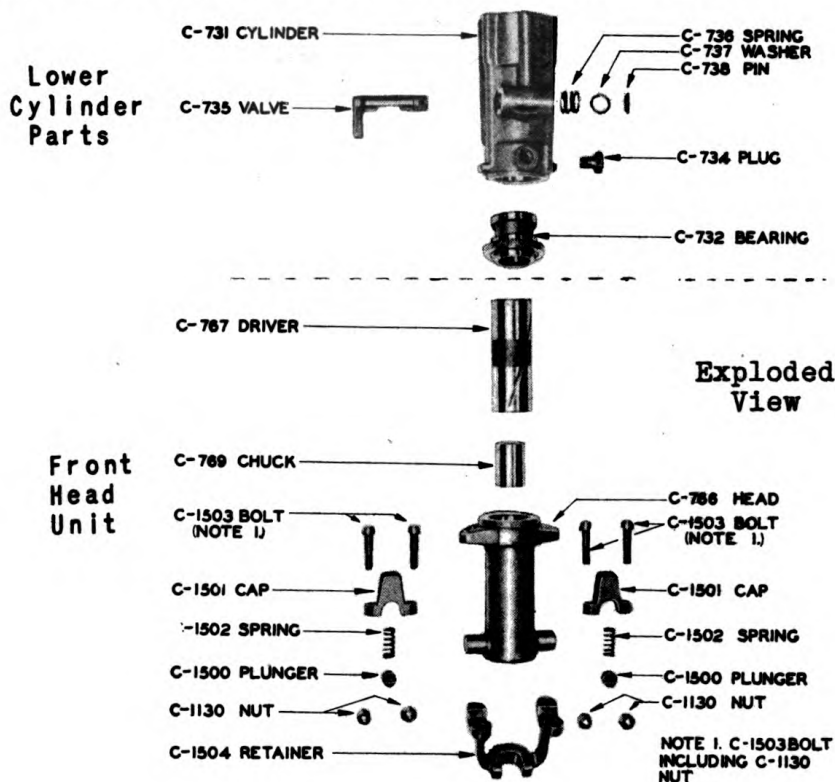
B. To remove the No. C-732 Bearing:

1. Remove the No. C-765 Piston Hammer from the upper end of the No. C-731 cylinder.
2. Insert it back into the cylinder so that the heavy side of No. C-765 piston lies against the No. C-732 bearing.
3. Place a rod or drift behind and against the No. C-765 piston.
4. Drive the No. C-732 bearing out of the No. C-731 cylinder.
5. Clean the No. C-732 bearing thoroughly in gasoline.
6. Clean out both oil holes thoroughly before reassembling.
7. Reinsert the No. C-732 bearing into the No. C-731 cylinder. (Use a small arbor press or tap in with wood block.)

FRONT HEAD UNIT

(See Illustration No. 11, Below)

The No. C-766 Front Head contains the No. C-767 chuck driver, No. C-769 chuck and the Steel Retainer unit.



No. C-767 Chuck Driver and No. C-769 Chuck (See Illustration No. 11, Page 24)

1. The No. C-767 Chuck driver and No. C-769 chuck drop out of the upper end of the No. C-766 front head as a unit.
2. Inspect the flutes located at the upper end of the C-767 chuck driver. (Refer to Illustration No. 10, Page 22.)
3. Replace chuck driver when flutes are worn down $1/32"$. (The wear and size of the flutes on the No. C-767 chuck driver is similar to the flutes on the No. C-765 piston hammer.)
4. The No. C-769 chuck should be replaced if the hex. surfaces inside are badly worn.

To Replace Chuck:

1. Salvage a discarded No. C-765 piston.
2. Cut it into two sections at a point approximately four inches from the fluted end.
3. Drop the fluted section in behind the No. C-769 chuck in the No. C-767 chuck driver.
4. Drive or press the No. C-769 chuck out by contacting the worn C-765 piston piece against the No. C-769 chuck. (Note: A fluted section is used to obtain the maximum bearing surface when pressing against the No. C-769 chuck. It is not advisable to attempt this operation unless properly equipped because the C-769 chuck has an extremely tight fit in the C-767 chuck driver.)

Steel Retainer Parts

The steel retainer parts, located at the lower end of the No. C-766 front head, hold the drill steel in the No. C-769 chuck. (See Illustration No. 11, Page 24.)

To Disassemble the Unit:

1. Remove the 4 No. C-1503 steel retainer bolts and nuts.
2. Clean all parts thoroughly in gasoline.
3. Before reassembling, place a small amount of light cup grease in each No. C-1501 steel retainer cap.
4. Reassemble in reverse order.

Cleaning Oil Channels in No. C-766 Front Head

Before reinserting the No. C-767 Chuck Driver and No. C-769 chuck into the No. C-766 front head, pass compressed air through the oil hole to blow out any small particles which might impair lubrication.

COMPLETE ASSEMBLY

All unit assemblies having been properly cleaned, inspected, repaired or replaced may now be reassembled. Follow reassembly instructions as given previously for each unit or reverse disassembly procedure.

As a final essential operation in servicing the tool and before placing it in operation, it is very important that the machine be flushed with liberal amounts of light machine oil. Pour the oil into the air inlet and apply compressed air to flush the oil through the internal parts.

Fill the oil reservoir in cylinder with the required lubricant (S.A.E. 10 - U. S. Army specification No. OE - 10 oil.) (See page 1, Operator's Instructions.)

The Rock Drill is now ready for service.

INDEX TO PARTS LIST

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EXPLODED VIEW—Lower Cylinder and Front Head	31
PARTS LIST, NUMERICAL	32
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PARTS LIST

CROSS SECTION VIEWS

EXPLODED VIEWS

PREPARATION OF REQUISITIONS

Sample Copy for Use in the Preparation of Requisitions

Revisions in QMC Form 400 for requisitioning spare parts are confined to new column headings. Until new forms are available all organizations are to continue using the present form and either type or write in corrections indicated in column headings.

Under revised heading "Nomenclature and Unit" list the article and the unit (ea for each; lb for pound, etc.). Under heading "Authorized or Maximum Level" list the authorized depot stock levels or organizational allowances given in Part III of the Corps of Engineers Supply Catalog. The total number on hand for each item is listed under "On Hand". In column

headed "Due In" enter the total quantity previously requisitioned but not delivered. For "Initial" and "Replenishment" requisitions, the sum of "Required", "Due In", and "On Hand" should equal the "Authorized or Maximum Level".

On this page is shown a sample requisition on QMC Form No. 400 which conforms to the latest revisions. The marginal notes give instructions for preparing a requisition for spare parts for Engineer equipment. Additional information on this subject is contained in section AA-1 of Part III Engineer Supply Catalog, available from the Engineer Field Maintenance Office, P. O. Box 1679, Columbus, Ohio.

State PERIOD designation by use of one of the following terms:

- (1) "INITIAL"—first requisition of authorized allowances.
- (2) "REPLENISHMENT"—subsequent requisitions to maintain authorized allowances.
- (3) "SPECIAL"—requisitions for necessary repairs not covered by allowances.

Type "SPARE PARTS" in upper right hand corner of requisition.

Give complete shipping instructions. Special instructions for packing, marking, routing, etc., should be given at the end of the requisition.

State proper nomenclature of machine, also make, model, machine serial number and U. S. A. registration number.

Prepare a separate requisition for each different machine.

State basis or authority and date delivery is required, immediately below description of machine.

Double space between items.

Group parts required under group headings as shown in manufacturers' parts catalogs (Technical Manuals).

State manufacturers' parts numbers and nomenclature descriptions accurately and completely. Do not use abbreviations.

(SAMPLE)
REQUISITION

WAR DEPARTMENT
Q. M. C. Form No. 400
Revised Apr 4, 1941

To: **Engineer Field Maintenance Office** No. of Sheets **1** Sheet No. **1**
P.O. Box 1679, Columbus, Ohio

Requisition No. **E-531-3-44** Date **6 October 1943** Period **Special**

SHIP TO **Engineer Property Officer, Pine Camp, NEW YORK**

MARKED FOR: **Supply Officer, 147th Engineer Regiment, Pine Camp, NEW YORK**

Has been forwarded By (show Signature, Rank, Organization, Destination. If different from "SHIP TO" include address):

Robert E. Roe
Robert E. Roe
Major, C.E.
Engineer Property Officer

Approved BY for the Commanding Officer

John E. Doe
John E. Doe
Col., C.E.
Executive Officer

PR. NO.	NOMENCLATURE AND UNIT	AUTHORIZED OR MAXIMUM LEVEL	ON HAND	DUE IN	REQUIRED	APPROVED
PARTS FOR	DRILL, PNEUMATIC, ROCK, 55 LB. CLASS, INDEPENDENT PNEUMATIC TOOL CO., THOR	MODEL 75, SERIAL NO. 35611, U.S.A. REG. NO. W-1088-ENG-2179.				
Basis: Repair of disabled equipment						
Delivery requested by 20 October 1943						
BACK HEAD AND UPPER CYLINDER UNIT						
C-511	PAWL, Rotation	ea.	-	0	0	3
C-513	SPRING, Pawl	ea.	-	0	0	3
LOWER CYLINDER AND FRONT HEAD UNIT						
C-736	SPRING, Exhaust Valve	ea.	-	0	0	1
C-1500	PLUNGER, Steel Retainer Lock	ea.	-	0	0	1

*Nonexpendable items such as tools must be accounted for, when requisitioned, by a statement that they have been placed on REPORT OF SURVEY or STATEMENT OF CHARGES.

Emergency requisitions sent by telephone, telegraph or radio must always be confirmed immediately with requisition marked: "Confirming (state identifying data)."

PREPARATION OF REQUISITIONS

A sample requisition in the correct form for submission by the Engineer Property Officer is shown on the opposite page.

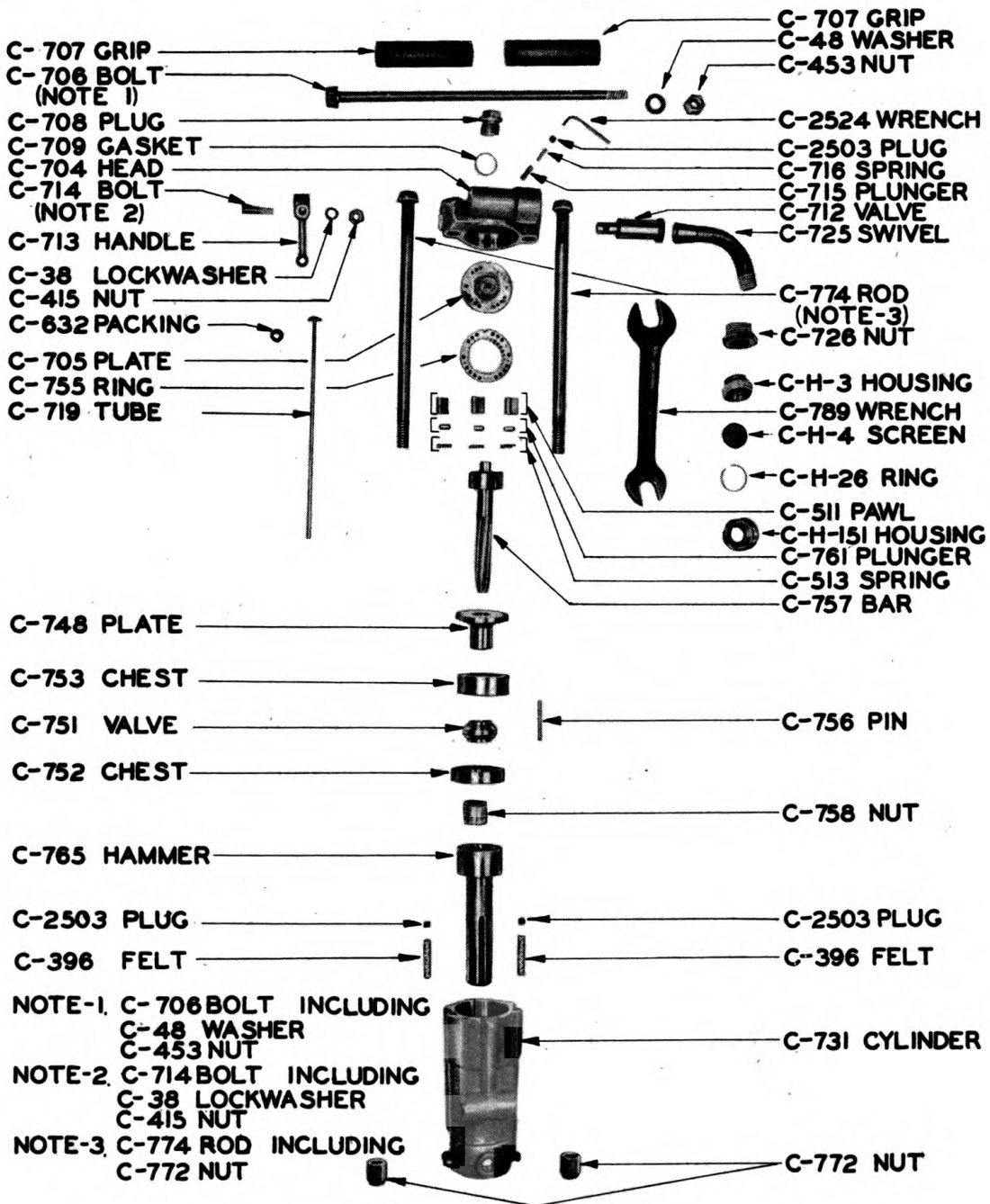
THIS SHALL BE FOLLOWED IN MAKING OUT REQUISITIONS

In order to eliminate duplication of work, Property Officers may authorize organizations to prepare requisitions in final form, leaving requisition number space blank for completion by Property Officer.

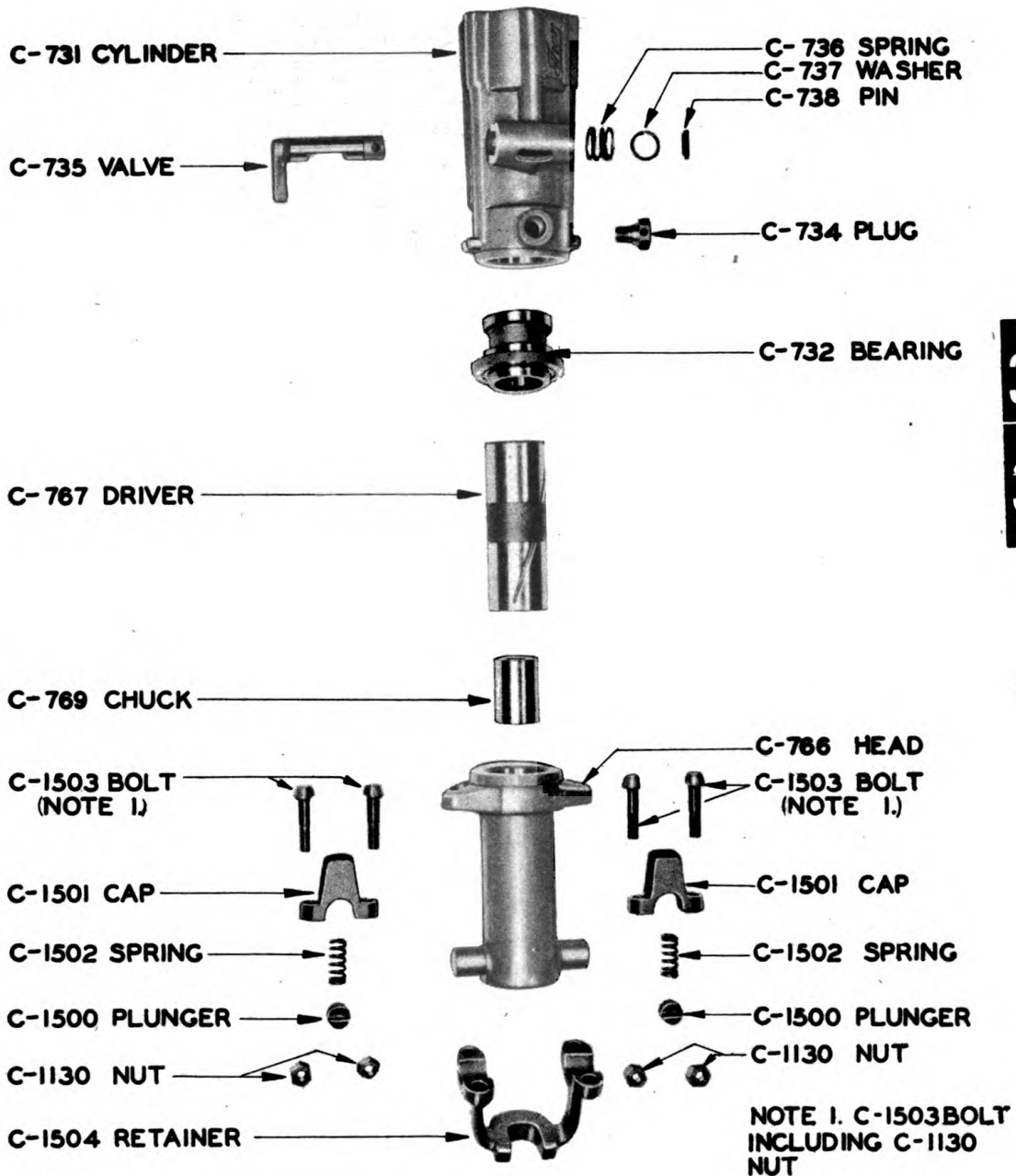
THE FOLLOWING RULES WILL BE OBSERVED CAREFULLY IN PREPARING REQUISITIONS FOR SPARE PARTS:

- a. Prepare a separate requisition for each different machine.
- b. Type "SPARE PARTS" in upper right hand corner of requisition form.
- c. State PERIOD designation by use of one of the following terms:
 - (1) "INITIAL"—first requisition of authorized allowances.
 - (2) "REPLENISHMENT"—subsequent requisitions to maintain authorized allowances.
 - (3) "SPECIAL"—requisitions for necessary repairs not covered by allowances.
- d. Give complete shipping instructions.
- e. State proper nomenclature of machine, and make, model, serial number and registration number.
- f. State basis of authority, and date delivery is required, immediately below description of machine.
- g. Group parts required under group headings as shown in manufacturer's parts catalogs.
- h. State manufacturers' parts numbers and nomenclature descriptions accurately and completely. Do not use abbreviations.
- i. Double space between items.
- j. Emergency requisitions sent by telephone, telegraph, or radio must always be confirmed immediately with requisition marked: "Confirming (state identifying data)."
- k. Nonexpendable items must be accounted for.

EXPLODED VIEW OF BACK HEAD AND UPPER CYLINDER UNITS



EXPLODED VIEW OF LOWER CYLINDER AND FRONT HEAD UNITS



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NUMERICAL PARTS LIST
No. 75 Thor Pneumatic Rock Drill

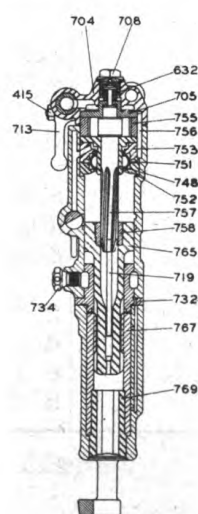
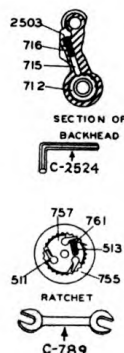
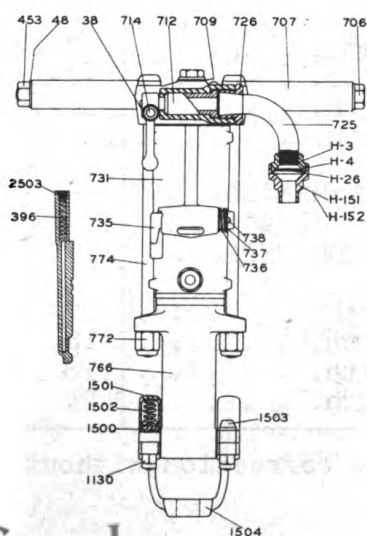
Manufacturer's Part No.	Nomenclature	No. of Parts Per Tool	Wt. each in lbs.	Price per Part
C-38	Lock Washer, Throttle Valve Handle Bolt	1		\$.10
C-48	Washer, Handle Bolt	1		.10
C-396	Felt, Oil Control	2		.15
C-415	Nut, Throttle Valve Handle Bolt	1		.15
C-453	Nut, Handle Bolt	1	1/8	.10
C-511	Pawl, Rotation	3		1.10
C-513	Spring, Pawl	3		.10
C-632	Packing, Water Tube	1		.10
C-704	Head, Back	1	6-1/2	20.50
C-705	Plate, Back Head	1	3/4	5.00
C-706	Bolt, Handle (Including C-48 Washer and C-453 Nut)	1	1-3/4	.95
C-707	Grip, Rubber	2	3/4	.75
C-708	Plug, Air Tube	1	1/4	1.50
C-709	Gasket, Air Tube Plug	1		.10
C-712	Valve, Throttle	1	3/4	4.00
C-713	Handle, Throttle Valve	1	3/8	2.50
C-714	Bolt, Throttle Valve Handle (Including C-38 Lock Washer and C-415 Nut)	1	1/4	.90
C-715	Plunger, Throttle Valve Detent	1		.50
C-716	Spring, Throttle Valve Detent Plunger	1		.10
C-719	Tube, Air	1	1/8	.95
C-725	Swivel, Air Inlet	1	3/4	3.25
C-726	Nut, Air Inlet Swivel	1	1/4	1.95
C-731	Cylinder	1	12	47.50
C-732	Bearing, Cylinder Front	1	2-1/2	9.25
C-734	Plug, Oil	1	1/8	.50
C-735	Valve, Exhaust	1	1/2	5.50
C-736	Spring, Exhaust Valve	1		.50
C-737	Washer, Exhaust Valve	1		.10
C-738	Pin, Exhaust Valve Re- tainer	1		.50
C-748	Plate, Valve Guide	1	1	8.00
C-751	Valve, Automatic	1	1/8	6.50
C-752	Chest, Valve (Front)	1	3/4	5.50
C-753	Chest, Valve (Rear)	1	1	7.75
C-755	Ring, Ratchet	1	1	7.00
C-756	Pin, Valve Chest Dowel	1		.25
C-757	Bar, Rifle	1	1-1/2	11.55
C-758	Nut, Rifle	1	1/2	3.40

(All prices subject to correction without notice.)

PARTS LIST

33

Manufacturer's Part No.	Nomenclature	No. of Parts Per Tool	Wt. each in lbs.	Price per Part
C-761	Plunger, Pawl	3		\$.15
C-765	Hammer, Piston	1	4	21.95
C-766	Head, Front	1	7-3/4	22.50
C-767	Driver, Chuck	1	3-3/4	15.50
C-769	Chuck, 1" Hex. x 4-1/4" Shank	1	1-1/4	5.80
C-772	Nut, Side Rod	2	1/8	.45
C-774	Rod, Side (Including C-772 Nut)	2	2	1.55
C-789	Wrench, Machine, 1-1/16" and 1-1/4" openings	1	2-1/4	1.05
C-1130	Nut, Steel Retainer	4		.35
C-1500	Plunger, Steel Retainer Lock	2	1/8	1.60
C-1501	Cap, Steel Retainer	2	1-3/4	4.00
C-1502	Spring, Steel Retainer	2	1/8	.60
C-1503	Bolt, Steel Retainer (Including No. C-1130 Nut)	4	1/4	.90
C-1504	Retainer, Steel 1" Hex. 4-1/4" Shank	1	2-1/4	7.70
C-2503	Plug, Oil Control and Throttle Valve Detent Plunger.	3		.15
C-2524	Wrench, 3/16" Hex. for No. C-2503 Plug.	1		.10
C-H-3	Housing, Air Screen (male)	1	1/4	.80
C-H-4	Screen, Air	1		.25
C-H-26	Ring, Air Screen Lock	1		.10
C-H-151	Housing, Air Screen (female)	1	1/4	1.25
C-H-152	Strainer, Air Complete (Inc. C-H-3, C-H-4, C-H-26 and C-H-151)	1	1/2	2.40



32

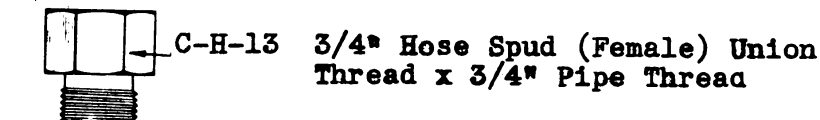
33

ACCESSORIES
for
No. 75 THOR PNEUMATIC ROCK DRILL

Manufacturer's Part No.	Nomenclature	Wt. each in lbs.	Price per Part
	LEADER OR WHIP HOSE ITEMS:		
	Hose, air, 3/4", 18 inch length .	1-1/8	\$.60
	Hose, Air, 3/4", 10 foot length .	7-1/2	4.00
K-7	Coupling, Universal, Kelly, 3/4" female thread.	1/2	.80
C-H-10	Spud, hose, 3/4" male union thread x 3/4" pipe thread. . . .	3/8	.50
C-H-13	Spud, hose, 3/4" female union thread x 3/4" pipe thread. . . .	1/2	.50
C-H-14	Stem, hose, 3/4" straight	1/4	.50
C-H-17	Clamp, hose, 3/4" (including two H-23).	1/2	.45
C-H-23	Bolt and nut, 3/4" hose clamp . .	...	.05
C-H-24	Nut, union, 3/4" hose	3/8	.55
C-H-49	Washer, 3/4" hose union nut . . .	...	.05
108	Gasket, air, Kelly standard . . .	...	.06
	BIT, ROCK, DETACHABLE, TIMKEN - CENTER HOLE, 4-POINT:		
H-1-5/8	1-5/8" gauge size	1/2	.33
H-1-3/4	1-3/4" gauge size	1/2	.33
H-1-7/8	1-7/8" gauge size	1/2	.34
H-2	2" gauge size	5/8	.34
H-2-1/8	2-1/8" gauge size	5/8	.34
	STEEL, ROCK DRILL, 1-1/8" ROUND HOLLOW, 1" HEXAGON x 4-1/4" SHANK, STYLE "H" TIMKEN THREAD:		
	2 feet drilling length.	7-1/2	3.10
	4 feet drilling length.	13-1/2	4.35
	6 feet drilling length.	18-1/2	5.60
	8 feet drilling length.	25-1/2	6.85
	STEEL, ROCK DRILL, 1" HEXAGON HOLLOW, 1" HEXAGON x 4-1/4" SHANK, STYLE "H" TIMKEN THREAD:		
	2 feet drilling length.	7	2.75
	4 feet drilling length.	13	3.85
	6 feet drilling length.	18	4.95
	8 feet drilling length.	24	6.05

(All prices subject to correction without notice.)

ACCESSORIES



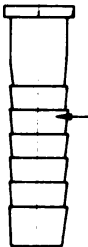
C-H-13 3/4" Hose Spud (Female) Union
Thread x 3/4" Pipe Thread



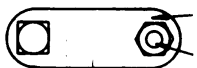
C-H-49 3/4" Hose Union Nut Washer



C-H-24 3/4" Hose
Union Nut

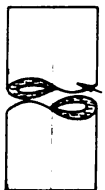


C-H-14 3/4" Straight
Hose Stem



C-H-17 3/4" Hose Clamp
(Inc. (2) H-23)

C-H-23 3/4" Hose Clamp
Bolt and Nut

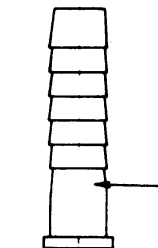


3/4" Air Hose

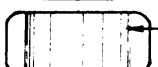


C-H-17 3/4" Hose Clamp
(Inc. (2) H-23)

C-H-23 3/4" Hose Clamp
Bolt and Nut



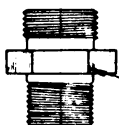
C-H-14 3/4" Straight
Hose Stem



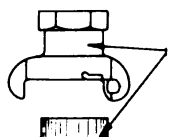
C-H-24 3/4" Hose
Union Nut



C-H-49 3/4" Hose Union Nut Washer



C-H-10 3/4" Hose Spud (Male) Union
Thread x 3/4" Pipe Thread



K-7 Kelly 3/4" Female Thread
Universal Coupling
No. 108 Kelly Standard Air Gasket

Shank (1" Hex.
x 4-1/4")

Collared
Drill Steel

34 - 35

Detachable
Bit

MEMORANDA

